

Notice of Allowability

Application No.

09/995,121

Examiner

Duyen M. Doan

Applicant(s)

PARHAM, JEFFREY B.

Art Unit

2143

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 12/20/05.
2. ☒ The allowed claim(s) is/are 1,4-9.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).


* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 1/27/06.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


DAVID WILEY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. David Wier (Registration number 48,229) on 1/27/06.

Claims 2,3 are cancelled.

Adding limitations of claims 2 and 3 into independent claims 1 and 9.

Claims 4,5,6,7 are now depended on claim 1.

Claim 9, Change computer-readable medium to computer-storage medium.

The application has been amended as follows:

Claim 1:

A method for monitoring replication latency in a computer system comprising a plurality of servers connected by a plurality of data links, and wherein the servers periodically replicate object updates with one another and maintain an update sequence number that is increased upon update to the server's replica of a database, the method comprising: first maintaining, by each of the plurality of servers, a timestamp that is posted upon each update to the server's database; second maintaining, by two or more of the plurality of servers, a replica partner vector table that includes for each other server from which the server replicates, the update sequence number of such other

Art Unit: 2143

server at a time of a most recent replication from such other server or the timestamp of the last successful replication attempt with such other server; transmitting a copy of the replica partner vector table of a local server to a remote server; comparing, by the remote server, the update sequence numbers and timestamps in the replica partner vector table received from the local server to the update sequence numbers and timestamps in the replica partner vector table of the remote server; updating, by the remote server, the replica partner vector table received from the local server; transmitting, by the remote server, a copy of the updated replica partner vector table and object updates to the local server; improving, by the local server, upon receiving the updated replica partner vector from the remote server, update sequence numbers or timestamps in the partner vector table of the local server; [and] calculating, by the local server, a difference between the timestamp for each server in the replica partner vector and a current time; comparing, by the local server, the difference to a maximum allowable latency time period; and generating, by the local server, an alert if the difference is greater than the maximum allowable latency time.

Claim 4:

The method of claim [3] 1, wherein the alert generated is an email message sent to a network administrator.

Claim 5:

Art Unit: 2143

The method of claim [3] 1, wherein the alert generated is an email message sent to a user in the computer system.

Claim 6:

The method of claim [3] 1, wherein the alert generated is a message displayed on a user's computer screen.

Claim 7:

The method of claim [3] 1, wherein the alert generated is a broadcast message to all servers in the computer system.

Claim 9:

A computer-[readable] storage medium having computer-executable components thereon for monitoring replication latency in a computer system, the computer system comprising a plurality of servers connected by a plurality of data links, and wherein the servers periodically replica object updates with one another and maintain an update sequence number that is increased upon update to the server's replica of a database, the components performing the steps of: first maintaining, by each of the plurality of servers, a timestamp that is posted upon each update to the server's database; second maintaining, by two or more of the plurality of servers, a replica partner vector table that includes for each other server from which the server replicates, the update sequence number of such other server at a time of a most recent replication from such other

Art Unit: 2143

server or the timestamp of the last successful replication attempt with such other server; transmitting a copy of the replica partner vector table of a local server to a remote server; comparing, by remote server, the update sequence numbers and timestamps in the replica partner vector table received from the local server to the update sequence numbers or timestamps in the replica partner vector table of the remote server; updating, by the remote server, the replica partner vector table received from the local server; transmitting, by the remote server, a copy of the updated replica partner vector table and object updates to the local server; improving, by the local server, upon receiving the updated replica partner vector from the remote server, update sequence numbers or timestamps in the partner vector table of the local server; [and] calculating, by the local server, a difference between the timestamp for each server in the replica partner vector and a current time; comparing, by the local server, the difference to a maximum allowable latency time period; and generating, by the local server, an alert if the difference is greater than the maximum allowable latency time.

Reasons for Allowance

The following is an examiner's statement of reasons for allowance:

The prior art of record single or in combination failed to teach the combination of the invention as claimed in independent claims 1,9.

Art Unit: 2143

For example it fail to teach comparing, by the remote server, the update sequence numbers and timestamps in the replica partner vector table received from the local server to the update sequence numbers and timestamps in the replica partner vector table of the remote server.

Pasad failed to teach an updated sequence number for uniquely identifying updates to data on a server according to sequential reference scheme. Pasad instead teaches determining whether a replica should be updated based on a comparison between timestamp only. The present invention comparing both the timestamp and the sequence number to determine whether a replica should be updated.

Specially, the limitations calculating, by the local server, a difference between the timestamp for each server in the replica partner vector and a current time; comparing, by the local server, the difference to a maximum allowable latency time period; and generating, by the local server, an alert if the difference is greater than the maximum allowable latency time which clearly support by the specification pages 15-17.

The combination of Pasad and Lever failed to teach the difference between the timestamp for each server in the replica partner vector and the current time. Level reference directed to compare the time it takes the computer to process an interrupt and compare this time to the current time to get the latency time, and compare the latency time to a predetermined threshold to determine if an alarm or alert should be provide to the user of computer. The present invention directed to calculating difference between the timestamp for each server in the replica partner vector and a current time; comparing, by the local server, the difference to a maximum allowable latency time

Art Unit: 2143

period. The difference is explicitly define to be the difference between the timestamp for each server in the replica partner table and a current time. This feature in light of other features of the independent claims 1,9 enable claims' allowable.

The dependent claims further limit the independent claims and are considered allowable on the same basis as the independent claims as well as for the further limitations set forth.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Claims 1, 4-9 are allowed.

Art Unit: 2143

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duyen M. Doan whose telephone number is (571) 272-4226. The examiner can normally be reached on 9:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A. Wiley can be reached on (571) 272-3923. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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